Recent Advances

Rheumatology

Anthony Bradlow, Joel David

The changing philosophies affecting medicine as a whole are at the forefront of rheumatology. Many of the publications of the past year have centred on improving and increasing the safety of drug treatment. There are now good grounds for hope that several newer agents to ameliorate rheumatoid arthritis are available or are in trial phase. Attitudes to chronic back pain and the chronic fatigue syndrome are more positive and treatment is more proactive. Osteoporosis is recognised as an important public health issue; the role of screening with bone densitometry has become better defined.

Safety of individual non-steroidal anti-inflammatory drugs

The choice of non-steroidal anti-inflammatory drug for individual patients has until recently depended on the doctor's experience, the class of drug, and the manufacturer's recommendations. A recent publication by the Committee on Safety of Medicines has given a new perspective to selecting them.¹ The committee assessed several years of reports of adverse drug reactions (yellow card) for the seven most widely used non-steroidal anti-inflammatory drugs in the United Kingdom. Ibuprofen carried the lowest risk, naproxen, indomethacin, and diclofenac intermediate risk, and azapropazone the highest risk of serious adverse upper gastrointestinal events at the doses in which these drugs are normally prescribed (fig 1). Furthermore, azapropazone had the highest number of yellow card reports for renal, liver, haematological, and hypersensitivity reactions. The report recommends that azapropazone should be used only when other non-steroidal anti-inflammatory drugs have failed, doses being restricted to a maximum of 600 mg daily in patients over 60. Drugs with low risk should generally be preferred, and these should be started in the lowest recommended dose. Only one non-steroidal anti-inflammatory drug should be used at a time. The

Recent advances in rheumatology

- Ibuprofen is the safest non-steroidal anti-inflammatory drug when used at conventional doses
- Treatment with a monoclonal antibody to tumour necrosis factor produces significant but temporary improvement in the severity of rheumatoid arthritis
- Methotrexate is well tolerated and effective for very long periods in most patients with rheumatoid arthritis, but possible long term side effects on the liver give cause for concern
- Specialist rheumatology nurse practitioners and day patient management of rheumatoid arthritis are likely to play an increasing part in the future
- Patients with acute back pain should be mobilised as quickly as possible and continue to work
- In patients with rheumatoid arthritis prednisolone treatment is associated with significant bone loss at doses below 5 mg daily and above 7.5 mg daily
- No infective cause for rheumatoid arthritis has yet been found

report concludes that all members of this group are contraindicated in patients with peptic ulceration. This is controversial for patients with rheumatoid arthritis, who frequently have or have had peptic ulceration.

Tiaprofenic acid is also mentioned in the same report as a cause of severe cystitis; a recent editorial in the *BMJ* asked whether the time had now come to withdraw tiaprofenic acid from use.² Like oral preparations, topical non-steroidal anti-inflammatory drugs have also recently been implicated in renal impairment.³

Cytokines and rheumatic disease

Cytokines such as interleukin-1, interleukin-6, tumour necrosis factor alpha, and granulocyte-macrophage colony stimulating factor have an important role in inflammatory arthritis as they promote systemic and local inflammation, which in rheumatoid arthritis may damage joints.⁴ Individual cytokines interact with one another to amplify the inflammatory process. Between attacks of gout low grade inflammation modulated by cytokines and proteins bound to crystals may play a part in joint destruction.⁵

FIG 1—Reporting frequencies for gastrointestinal reactions associated with seven non-steroidal anti-inflammatory drugs reported through British yellow card scheme, 1989-93. Frequencies are expressed as number of reactions reported per 100 000 prescriptions corrected for time trends in reporting¹

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Trials of monoclonal antibodies against cytokines have been under way for some years⁶; in an open study chimeric monoclonal antibody to tumour necrosis factor alpha given to patients with rheumatoid arthritis improved the severity of arthritis and reduced laboratory measures of inflammation.⁷ A multicentre randomised double blind placebo controlled trial of treatment with this monoclonal antibody in "moderately severe" rheumatoid arthritis has been published.⁸ This study assessed the effects of two dose regimens (1 mg/kg or 10 mg/kg); at four weeks after a single infusion of the antibody both regimens were effective, the higher dose regimen impressively so. Repeated infusion of the antibody was effective in some patients,⁹ although adverse effects were more common than in the double blind study. Treatment with chimeric monoclonal antibody to tumour necrosis factor alpha has promise, although more information about risks is required before it can be considered to be a viable treatment for rheumatoid arthritis.

Further developments in treating rheumatoid arthritis

Methotrexate—A feature of the past year has been the increase in the use of methotrexate to treat rheumatoid arthritis. The drug seems to be well tolerated; almost two thirds of the 123 patients with rheumatoid arthritis enrolled in a recent study were still taking methotrexate five years later.¹⁰ Few of those who stopped taking the drug did so because it was ineffective. However, unwanted effects, particularly liver cirrhosis, are worrying. Protocols for monitoring methotrexate treatment in rheumatoid arthritis have recently been published,¹¹ and the British Society for Rheumatology is shortly to introduce its own guidelines for monitoring methotrexate and other second line drug treatments for rheumatoid arthritis.

Cyclosporin was licensed in 1994 in the United Kingdom for treating rheumatoid arthritis.¹²

Tenidap is being considered for treating rheumatoid arthritis.¹³ It modulates cytokine bioactivity and inhibits leukotriene synthesis.

Treatment of systemic vasculitis—Systemic vasculitis (including that associated with rheumatoid arthritis) may have a high death rate. Combinations of high dose steroids and cyclophosphamide have been shown to be useful.¹⁴ Rheumatoid vasculitis (fig 2) may not be recognised because the classic signs—skin infarcts, neuropathy, and episcleritis—may be lacking. The only indications of this potentially treatable complication of the disease in patients with rheumatoid arthritis may be rapid weight loss, fever, malaise, and a persistently raised erythrocyte sedimentation rate and C reactive protein concentration.¹⁵ A clinical score to grade activity of rheumatoid and other forms of vasculitis (including systemic lupus erythematosus)¹⁶ correlates well with other scores of vasculitis activity and provides a useful monitor of the disease's activity and response to treatment.

Oral desensitisation of rheumatoid arthritis has long been a goal of rheumatologists. A three month placebo controlled double blind study of soluble chicken type II collagen has previously demonstrated significant improvement in disease activity.¹⁷ Studies are continuing into other oral desensitising agents.¹⁸

Second line drugs—There has long been doubt about the efficacy of second line drugs in preventing the progression of rheumatoid arthritis.¹⁹ Nevertheless, second line treatment continues to be used from an early stage in the disease.²⁰ A partly reassuring message has recently emerged. Good disease control and improved function was achieved in the long term in almost a third of patients treated with sulphasalazine, penicillamine, or injectable gold.²¹ Possibly even

Pathogenesis of anaemia of chronic disease²³

Decreased production of red cells

- Inadequate iron supply:
 - Impaired absorption and transport
 - Failure to release iron stores
- Erythropoietin:
 - Decreased concentrations
 - Increased marrow resistance
- Ineffective erythropoiesis
- Abnormal development of erythroid progenitor cells

Increased destruction of red cells

- Not an important factor

better results will be shown with methotrexate and combinations of second line drugs.

Anaemia—In rheumatoid arthritis anaemia is due to a combination of factors, including gastrointestinal blood loss caused by non-steroidal anti-inflammatory drugs and the "anaemia of chronic inflammation"²² (box). Human recombinant erythropoietin is effective in raising haemoglobin concentrations in patients with active rheumatoid arthritis who have been adequately pretreated with iron.²⁴ The patients' energy improves significantly but not their indicators of disease activity.

Specialist nurse practitioners—Rheumatologists who work in association with specialist nurse practitioners believe that such nurses increase the effectiveness of practice, particularly in terms of giving information to and counselling patients. Patients with rheumatoid arthritis monitored by a nurse practitioner showed greater improvement in measures of pain, knowledge, and satisfaction than patients receiving care only from a consultant rheumatologist.²⁵

Day patient v inpatient management—Under increasing pressure to reduce hospital inpatient episodes, rheumatologists have examined whether patients with active rheumatoid arthritis hitherto admitted to hospital can be treated successfully as outpatients. A pilot study found comparable clinical outcome with inpatient and day case treatment, day case treatment being significantly cheaper.²⁶ As the authors concede, however, many patients with active rheumatoid arthritis need to be treated as inpatients; the study excluded patients admitted as emergencies, those with medical complications of rheumatoid arthritis, and those living too far from hospital to attend daily. The results of a larger study are awaited.

Chronic back pain and soft tissue rheumatism

Successful treatment of chronic back pain remains as elusive as the cause in most cases. An editorial reviewed recent discoveries about the possible role of cerebral factors and of sensitisation of the dorsal horn of the spinal cord in perpetuating pain, even when no direct cause for the pain can be found.²⁷ Treatments that lead to a reduction in cerebral activation of the sensitised dorsal horn may thus be the most effective way of dealing with chronic low back pain. Prevention of chronic low back pain by early mobilisation of patients with acute back pain is an approach increasingly favoured²⁸ and has been confirmed in the recent recommendations from the government's Clinical Standards Advisory Group.²⁹

Uncritical acceptance of the significance of abnormalities in scans from magnetic resonance imaging of the lumbar spine has been dented by the discovery that many people without low back pain have disc bulges on such scans (fig 3).³⁰ An accompanying editorial emphasises the hazards of scans taken "just in case,"

FIG 2—Rheumatoid vasculitis

FIG 3—Magnetic resonance imaging scan showing disc bulges, posteriorly between lower lumbar vertebrae. These were previously thought to cause back pain

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pointing out that this type of undirected investigation encourages illness related behaviour.³¹ Such a state of affairs is familiar to rheumatologists, who are frequently called on to reassure patients with abnormal results in inappropriately performed tests for rheumatoid factor and antinuclear antibody.

Whatever the appearance on magnetic resonance imaging, disability due to low back pain remains a major problem; return to work is governed as much by the sufferer's job and his or her compensation status as by the severity of the pain.³² This confirms the need for doctors to avoid abetting the sick role and illness behaviour at an early stage in patients with back pain if there is to be any hope that chronic back pain can be avoided.

Similarly, the development of the chronic fatigue syndrome might be related not only to the patient's tendency to somatise symptoms but also to the doctor's providing a sick note and expressing uncertainty about the diagnosis.³³

Such patients are often "difficult to help"—a term coined to replace pejorative names such as heartsink.³⁴ Patients with medically unexplained symptoms, severe untreatable illness, and coexisting social problems who are long term attenders at outpatient departments are particularly difficult to help. Since many patients attending rheumatology clinics fall into one or more of these categories, rheumatologists may be doomed not to satisfy a number of such patients.

Advances in understanding genetic influences in rheumatoid arthritis

Understanding of the genetic influences on rheumatoid arthritis has developed slowly. Conclusions are hampered by problems with defining rheumatoid arthritis, the more frequent occurrence of the disease in siblings and twins of patients with severe rheumatoid arthritis than in those with mild disease, and the cross sectional design of existing studies.³⁵ Uncertainty also persists about how much of the inheritance of rheumatoid arthritis is through HLA-DR or other genes.³⁶ Several groups think that HLA-DR genes constitute about 30% of the genetic components of rheumatoid arthritis.³⁷

Osteoporosis

Osteoporosis deserves a review of its own.³⁸ The value of bone densitometry as a research tool is

established; it is now available for clinical use and rheumatologists are frequently asked to advise on its results. The indications for densitometry include known oestrogen deficiency, vertebral deformity or a history of multiple low trauma fractures, radiographic osteopenia, and steroid treatment.³⁹ Serial bone densitometry measurements may be indicated for monitoring the effects of bone sparing treatment.

Bone densitometry has yielded important information in patients with rheumatoid arthritis; generalised bone loss occurs early in the disease and reflects disease activity.⁴⁰ The results also point to a narrow therapeutic window for steroid treatment in patients with rheumatoid arthritis: bone loss is high at prednisolone doses of less than 5 mg daily, probably owing to poor disease suppression, and over 7.5 mg daily.⁴¹

Future directions for rheumatology

Infection and inflammatory arthritis—Researchers have long believed that rheumatoid arthritis may be a consequence of infection; evidence for this has been lacking. The infective nature of Lyme disease, parvovirus B19 arthritis, and discoveries about reactive arthritis⁴² have boosted hopes that infection may be implicated in the aetiopathogenesis of rheumatoid arthritis and Still's (systemic) disease.

Kawasaki syndrome continues to fascinate paediatricians and rheumatologists. No bacterial infection has been found to explain this syndrome; agents such as rickettsia, parvovirus, and retrovirus have been suggested. One hypothesis is that microbiological toxins acting as superantigens may stimulate the Vβ² region of the immunoglobulin molecule and T cells.⁴³ Staphylococci and streptococci that produce toxins similar to those of the toxic shock syndrome have been found in children with the Kawasaki syndrome. Thus the effectiveness of intravenous immunoglobulin in treating the Kawasaki syndrome could be the result of its neutralising effect on the toxin.

Neuropeptides—The role of neuropeptides (particularly substance P) in perpetuating synovitis is being examined.⁴⁴ To date most studies have been performed in animals.

Free radicals—The role of free radicals (including nitric oxide and hydrogen peroxide) in inflammation awaits further clarification.⁴⁵

Long term studies in rheumatoid arthritis—Valid conclusions about the natural course and efficacy of treatment of rheumatoid arthritis require studies extending over decades. Much existing long term knowledge is based on studies using outmoded treatments and means of assessment. The results of long term studies based on more modern methods such as the health assessment questionnaire⁴⁶ will appear in increasing numbers, giving a more accurate picture of the progression of rheumatoid arthritis.

Conclusions

A first glance through the published work of the past year might support the cynical argument that there have been no significant recent advances in rheumatology. Rheumatoid arthritis remains incurable, its mechanisms poorly understood, and its cause unknown. Back pain continues to cause major disability and economic loss. The need for hip and knee replacements for osteoarthritis remains as high as ever. This apparent gloom conceals, however, information that has led to improvements and greater safety in individual practice and benefit to patients. A spirit of encouraging patients with back pain not to take to their beds or to take time off work seems to be growing. In the future, rheumatologists are certain to face increasing questioning from their patients about the

wisdom of treatment with corticosteroids and non-steroidal anti-inflammatory drugs.

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Posters for accident departments: simple method of sustaining reduction in x ray examinations

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Abstract

Objective—To assess whether a simple strategy would sustain a reduction in the number of unnecessary x ray examinations.

Design—Use of posters to display guidelines encouraging the more effective use of radiology in patients with head injuries, twisted ankles, neck injuries, and abdominal pain.

Setting—Accident department of a large metropolitan district general hospital.

Patients—15875 patients attending the accident department over two years.

Main outcome measure—Proportion of patients having radiography.

Results—Referrals for skull radiography fell from 56% to 20% and those for abdominal radiography fell from 31% to 7%. Referral patterns for adults attending with twisted ankles and cervical spine injuries did not change. Reductions were sustained over two years.

Conclusion—Carefully designed posters provide a

simple method of reducing unnecessary x ray examinations.

Introduction

Concerns regarding the overuse of x ray examinations^{1,2} and increasing radiology workloads³ have led to attempts to reduce unnecessary radiography.⁴⁻¹⁰ Many studies have shown that, although guidelines and protocols can alter practice in the short term, the effect is difficult to sustain. We tested the effect of posters in reinforcing guidelines.

Patients and methods

The study was carried out in our accident department, which has 35 000 new patient attendances each year. Guidelines were prepared indicating when to request a radiograph in patients with head injuries,¹¹⁻¹³ cervical spine injuries,¹⁴ and abdominal pain¹⁵ and in adults with twisted ankles.¹⁶ A series of commercially